



**TOWNSEND WATER DEPARTMENT**  
540 Main Street West Townsend, Massachusetts 01474

Michael MacEachern, Chairman

Niles Busler, Vice-Chairman

Nathan Mattila, Clerk

Paul L. Rafuse,  
Water Superintendent

(978) 597-2212  
Fax (978) 597-5561

**WATER COMMISSIONERS MEETING MINUTES**  
September 14, 2015 - 5:30P.M.  
Water Department 540 Main Street, Meeting Room

*Noted*  
*NM*  
*Mattila*

**I. PRELIMINARIES:**

- 1.1 MM called the meeting to order at 5:35 p.m. at 540 Main Street.
- 1.2 Roll call showed Members present: Michael MacEachern-Chairman, Niles Busler-Vice Chairman and Nathan Mattila-Clerk. Guests Present: Paul Rafuse, Jim Blanchard and Brenda Boudreau.
- 1.3 MM announced that the meeting is being tape recorded.
- 1.4 Chairman's additions or deletions. MM added a last minute water application for approval. **NB made motion to approve a 1" service to 4 Edward Road with our inspection of the service. NM seconded. Unanimous vote.**
- 1.5 Review/Approve meeting minutes of August 10, 2015. **NB made a motion to approve the minutes of August 10, 2015. MM seconded. NM abstained due to absence.**
- 1.6 Review correspondence. The Board reviewed the correspondence.

**II. APPOINTMENTS:**

- 2.1 None.

**III. MEETING BUSINESS:**

- 3.1 Discuss the legality for adding fees for processing liens, touchpad readings and meter upgrade noncompliance. Paul is waiting for legal counsel to send their opinion regarding adding fees for water takers who do not comply with the meter upgrade and accounts sent to lien. The Board suggested that Paul call Anne O'Connor to publish this in the newspaper.
- 3.2 Discuss approve cost of janitorial services to clean office weekly. **NB approved a sum up to \$2,500.00 annually for janitorial services NM seconded.**
- 3.3 Discuss/Vote on matter of On Call duty and receiving compensation by Superintendent as brought to the attention of Town Counsel by the Board of Selectmen. Paul reported that he called the Ethics Commission himself to see how to rectify his on-call pay. The Ethics Commission told Paul that he needs to fill out a onetime disclosure form and have it signed by the selectmen to make it legal. The Board told Paul to let the selectmen know that the money is available in our budget.
- 3.4 Discuss/Vote on repairs/upgrades proposed at Fitchburg Rd. Storage tank and consideration of an Asset Management Plan. Paul reported that to better understand the Assessment management Plan he would like to invite Scott from Utility Service Group to the October 13, 2015 BOWC meeting
- 3.5 Discuss/Vote Cross St. Well water quality. Paul reported that the iron manganese is still an issue. The pantonite did help some but not enough. Paul was notified that there was a poor water quality issue in the center of town after putting the well back online. Paul reported that it is better but investigation is still needed. The Board suggested sampling and keep a record of the levels but to call Stantec first to see what they think.

**IV. COMMISSIONERS UPDATES AND REPORTS.**

4.1 NONE

**V. WATER SUPERINTENDENTS UPDATES AND REPORTS.**

5.1 Hybrid Vehicle. Paul reported that it was ordered and he was waiting for delivery.

5.2 Witch's Brook Well #1 Upgrades/Repairs. Paul reported that he has not been able to free up time to dig a trench for the Condit in the ground to run electricity from Well #2 to Well #1. The Boards wants to have the project scheduled.

5.3 Meeting with Melinda Ordway of the DOR Re: study into the creation of a DPW. Paul reported that the meeting is scheduled for September 15, 2015 @ 11:30 am if anyone from the board would like to attend.

**VI. OFFICE UPDATES AND REPORTS.**

6.1 The Board reviewed and Signed Bills Payable Warrants.

6.2 The Board reviewed payroll.

6.3 The Board reviewed and signed August Schedule of Bills Receivable report

6.4 The Board review August 2015 Accounts Receivable report.

6.5 Review August 2015 Appropriation Balance report. This report was not made available to the board.

NB made a motion to adjourn the meeting at 6:55 p.m. NM seconded. Unanimous vote.



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**WATER COMMISSIONERS MEETING AGENDA**  
September 14, 2015 - 5:30P.M.  
Water Department 540 Main Street, Meeting Room

**I. PRELIMINARIES:**

- 1.1 Call the meeting to order and announce meeting address.
- 1.2 Roll call.
- 1.3 Announce that the meeting is being tape recorded
- 1.4 Chairman's additions or deletions.
- 1.5 Review/Approve meeting minutes of August 10, 2015(SF)
- 1.6 Review correspondence.

**II. APPOINTMENTS:**

- 2.1

**III. MEETING BUSINESS:**

- 3.1 Discuss the legality for adding fees for processing liens, touchpad readings and meter upgrade noncompliance.
- 3.2 Discuss approve cost of janitorial services to clean office weekly.
- 3.3 Discuss/Vote on matter of On Call duty and receiving compensation by Superintendent as brought to the attention of Town Counsel by the Board of Selectmen
- 3.4 Discuss/Vote on repairs/upgrades proposed at Fitchburg Rd. Storage tank and consideration of an Asset Management Plan.
- 3.5 Discuss/Vote Cross St. Well water quality.

**IV. COMMISSIONERS UPDATES AND REPORTS.**

- 4.1

**V. WATER SUPERINTENDENTS UPDATES AND REPORTS.**

- 5.1 Hybrid Vehicle
- 5.2 Witch's Brook Well #1 Upgrades/Repairs
- 5.3 Meeting with Melinda Ordway of the DOR Re: study into the creation of a DPW.

**VI. OFFICE UPDATES AND REPORTS.**

- 6.1 Review and Sign Bills Payable Warrants.
- 6.2 Review payroll.
- 6.3 Review and sign August Schedule of Bills Receivable report (SF)
- 6.4 Review August 2015 Accounts Receivable report.
- 6.5 Review August 2015 Appropriation Balance report.

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**VII. ADJOURNMENT:**



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**VII. ADJOURNMENT:**

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**From:** Paul Rafuse [<mailto:prafuse@townsend.ma.us>]  
**Sent:** Thursday, September 10, 2015 1:12 PM  
**To:** Roney, Deirdre (ETH)  
**Subject:** Opinion Request

Hi Deidre,

To give you a brief background and give you a better understanding of my request. I am the Superintendent of a small Water Department in Townsend, MA which, besides myself consists of currently 3 other employees, 2 Water Technicians and 1 Office Administrator and we are an Enterprise Fund. As part of our responsibilities and duties myself, and the two other Water Tech's take "On Call" duties for after hours emergencies on a rotational basis. On Call is for a period of one week from 3:30 PM Friday afternoon until the following Friday morning at 7:00 AM. Each Water Tech including myself receives \$250.00 for taking on call which is factored into our pay and shown in detail when our budget is submitted for approval by our Board of Water Commissioners, then the Board of Selectmen for review and approval and, then ultimately approved at our Town Meeting. This has been the manner of our "On Call" structure for the past ten years when the Board of Water Commissioners voted and unanimously approved the restructuring of "On Call" duties and compensation that includes myself, the Superintendent (see attached Meeting Minutes of March 10, 2005).

However, last week after submitting our payroll information to the Town Treasurer that included on call pay for me, the Superintendent, we received a call from our Town Accountant as a courtesy that I may not receive my on call pay because one of the Board of Selectmen members (currently only consisting of two due to a recent resignation) although signed off on our payroll did so with a side note stipulation "except Water Dept. PR stipend – see as c41-s56". Obviously, because our payroll has never come under question after ten years and involving taking pay away from me, I inquired as to why this came under question. What I found out was, one of the Selectmen emailed our Town Counsel requesting an opinion in resolving an issue regarding our Building Commissioner's request for a stipend to perform additional work due to a Regional High School replacement project. In the email for some reason this Selectmen stated that "our Water Department Superintendent gives himself a stipend in addition to his salary when he is on-call, so I am not sure it is an ethics issue". Not only is this statement untrue but, as a result because of the way it was presented prompted Town Counsel to research into the matter of my on call pay and in a lengthy determination that I was in violation of M.G.L. c.268A, §19(b)(1) facing punishment of up to \$10,000.00 in fines or imprisonment of not more than 5 years in a state prison or no more than 2½ years in a house of correction (see attached).

With obvious concern I immediately requested to be put on the agenda at the next Board of Selectmen's meeting including my Board of Water Commissioners. At the Selectmen's meeting I presented several documents contradicting the statement made in the one Selectmen's email to Town Counsel that included (see attached) 1. Board of Water Commissioners meeting of March 10, 2005 approving the adjustment in on call. 2. Fiscal Year 2006 detailed budget approved at Town meeting on May 3, 2005 showing the compensation for on call under my name with an added note: "The increase in additional Gross-Dept. Head is due to the restructuring of the on call schedule that includes compensation for Dept. Head not previously received". 3. Fiscal Year 2005 detailed budget approved at Town meeting on May 4, 2004, that clearly shows I did not receive any compensation for on call prior to fiscal year 2006.

As you can clearly see I do not GIVE myself a stipend, nor am I able to assign or create duties in a way to benefit financially without the Board of Water Commissioners, the Board of Selectmen, and ultimately the public at Town Meeting reviewing and approving our budget. With that said I appeared before our Board

of Selectmen on Tuesday September 8, 2015 and stated my explanation and presented the Selectmen with the documentation attached. The Chairman would have none of what I presented to them and stuck with Town Counsel's opinion on the matter. After admitting he had this on his desk for five weeks and myself and my Board of Water Commissioners only seeing this a couple of days prior to the meeting he remained adamant that we, the Town was in violation as well as myself and that for now I not receive on call pay or be prohibited from performing on call until at which time the matter is resolved. Because the Board of Water Commissioners hadn't had time to digest the information the asked that they have a chance to discuss it at their meeting the following Monday. The Selectmen Chairman remained adamant and wanted an answer from the Water Commissioners or he would send it to the Ethics Commission. I made a request that the Board of Selectmen provide Town Counsel the correct information that I gave them and get an opinion based on the correct information. The Selectmen Chairman refused stating he was not involving Town Counsel any further on this matter. The end result was my on call pay was taken away indefinitely.

My request to you is upon your review of the information and the documentation attached, am I in violation or not. I am on the Board of Selectmen's agenda for Tuesday September 15<sup>th</sup> and if possible would like your opinion before that meeting.

Thank you for your time and consideration and hope to hear from you soon.

*Paul Rafuse*

Paul Rafuse  
Superintendent  
Townsend Water Department  
540 Main St.  
West Townsend, MA 01474  
Tel: 978-597-2212  
Fax: 978-597-5611  
E-mail: [prafuse@townsend.ma.us](mailto:prafuse@townsend.ma.us)

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It looks to me from the budget pages you submitted that the payments that water dept. employees receive for performing on call duties are folded into their regular paychecks. If that is the case, there is no issue under Section 20. If that is not the case, then I recommend that you take steps to have the payments made that way, to eliminate any potential issue under section 20.

### Recommendation

My recommendation is that you take the steps described above to address any potential issues under Section 19 and 20 of the conflict of interest law. You can self report the situation to the Enforcement Division and ask them if there is a violation; here is a link to their contact information. <http://www.mass.gov/ethics/commission-services/complaints/file-a-complaint.html> The best context in which to make a self report to the Enforcement Division is when you can state as part of doing so that you have received and followed advice from me about any steps you need to take to comply with the law.

Deirdre Roney  
General Counsel  
State Ethics Commission  
One Ashburton Place, Rm 619  
Boston, MA 02108  
(617) 371-9509  
[deirdre.roney@state.ma.us](mailto:deirdre.roney@state.ma.us)

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**From:** Paul Rafuse [<mailto:prafuse@townsend.ma.us>]  
**Sent:** Friday, September 11, 2015 8:18 AM  
**To:** Roney, Deirdre (ETH)  
**Subject:** RE: Opinion Request

Yes, at this point any assistance or advice you can provide would be helpful and greatly appreciated. As it stands now as I previously stated although, the Water Department has submitted a detailed budget fully disclosing who will be compensated for "on call" duty and the amount they will be compensated has gone through the approval process of multiple Boards and Committees and, ultimately Town Meeting for the past ten years, I have had this pay suspended from me in my opinion unjustly.

Could you provide me with the contact information for the Commission's Enforcement Division so, I may contact them to get a determination of whether this past practice violated the conflict of interest law or not?

Thank you

**From:** Roney, Deirdre (ETH) [<mailto:deirdre.roney@state.ma.us>]  
**Sent:** Thursday, September 10, 2015 4:50 PM  
**To:** Paul Rafuse <[prafuse@townsend.ma.us](mailto:prafuse@townsend.ma.us)>  
**Subject:** RE: Opinion Request

Dear Mr. Rafuse,

Determinations about whether past conduct violated the conflict of interest law are made by the Commission's Enforcement Division, so I am not able to give you an opinion about any past conduct. What I can do, if it would be useful to you, is to give you purely prospective advice with respect to how to comply with the conflict of interest law on a going-forward basis with respect to the issue of "on call" duties. Do you want me to do that?

Deirdre Roney  
General Counsel  
State Ethics Commission  
One Ashburton Place, Rm 619

**Paul Rafuse**

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**From:** Roney, Deirdre (ETH) <deirdre.roney@state.ma.us>  
**Sent:** Friday, September 11, 2015 10:26 AM  
**To:** Paul Rafuse  
**Subject:** RE: Opinion Request  
**Attachments:** DISC 19 Munic Financial Interest NEW.doc; INST 19 Munic Financial Interest NEW.doc

Dear Mr. Rafuse,

This is in response to your request for advice under the conflict of interest law, G.L. c. 268A. You are the superintendent of the town of Townsend's water department and, as such, a municipal employee subject to that law.

As I noted in my email to you yesterday, I can only give you prospective advice as to your future conduct. By doing so, I am not expressing any opinion as to whether any past conduct violates the conflict of interest law. Determinations as to whether past conduct violated the conflict of interest law are only made by the Commission's Enforcement Division.

As I understand the facts from your email below, the water department has a need for an employee to be "on call" for after hours duties. These duties are assigned to you and the department's two other water technicians on a rotating basis. Each employee who works "on call" receives a stipend of \$250 for doing so.

Based on these facts, there is the potential for two different types of conflict of interest issues, and there is also a solution to each of those issues.

Issue No. 1

The first potential issue is under Section 19 of the conflict of interest law. Section 19 of the law prohibits a municipal employee from participating in any particular matter, including a decision, in which he has a financial interest. It would raise an issue under Section 19 if you, as the superintendent, assign "on call" duties to yourself, even if you do so as part of creating a rotating schedule so that those duties are covered by yourself and other employees of your department.

There are a couple of ways to eliminate this Section 19 issue. One would be for someone other than yourself to create the schedule for on call duty coverage. If the Board of Water Commissioners established the schedule and you simply followed their directions, you would not have a Section 19 issue, because you would not be participating in making the decision, but merely carrying out their decision. Note that if this is the solution you choose, you cannot participate in creating a draft schedule for the Commissioners to approve; you cannot participate in the matter at all.

A second way to eliminate the Section 19 issue would be for you to obtain an exemption from Section 19 from your appointing authority (that is, whoever appointed you as superintendent, I don't know if that was the Board of Water Commissioners, the selectmen, or someone else). To obtain such an exemption, you would fill out the attached disclosure form, disclosing your financial interest in the particular matter of the assignment of on call duties. Your appointing authority has the power to approve your having the exemption, and there is a line on the form for that person (or persons) to sign indicating they have done so. Absent receiving such an exemption from your appointing authority, you should not assign yourself on call duties. I have attached the form you would use for this disclosure and the accompanying instructions.

Issue No. 2

The second potential issue here is under Section 20 of the conflict of interest law. Section 20 prohibits municipal employees from having financial interests in municipal contracts, unless there is an available exemption. A situation where an appointed, salaried town employee receives a separate payment for services from the town can raise an issue under Section 20 of the conflict of interest law. However, there is no issue under Section 20 if town employees receive payment for all the services they provide in the same paycheck, because then they only have a single employment contract with the town.



**DISCLOSURE BY NON-ELECTED MUNICIPAL EMPLOYEE OF FINANCIAL INTEREST  
AND DETERMINATION BY APPOINTING AUTHORITY  
AS REQUIRED BY G. L. c. 268A, § 19**

	<b>MUNICIPAL EMPLOYEE INFORMATION</b>
Name:	<b>Paul Rafuse</b>
Title or Position:	<b>Superintendent</b>
Municipal Agency:	<b>Townsend Water Department</b>
Agency Address:	<b>540 Main St., West Townsend, MA 01474</b>
Office Phone:	<b>978-597-2212</b>
Office E-mail:	<b><u>water@townsend.ma.us</u></b>
	My duties require me to participate in a particular matter, and I may not participate because of a financial interest that I am disclosing here. I request a determination from my appointing authority about how I should proceed.
	<b>PARTICULAR MATTER</b>
Particular matter  E.g., a judicial or other proceeding, application, submission, request for a ruling or other determination, contract, claim, controversy, charge, accusation, arrest, decision, determination, or finding.	Please describe the particular matter. <b>The Water Dept. has the need and requires personnel be available to be "on call" in order to respond to after hours emergencies. An "on call" shift is from 3:30 PM on Friday to 7:00 AM the following Friday. The employee that takes "on call" duty receives an additional \$250.00 in his pay. Due to the demand and responsibilities of "on call" duty and because there are only two other employees other than myself capable of and, licensed to perform this duty the Board of Water Commissioners voted unanimously in favor on March 10, 2005 to restructure the "on call" duty adding me to the rotation and receive the same \$250.00. This would also be reflected in the Water Dept. budget.</b>
Your required participation in the particular matter:  E.g., approval, disapproval, decision, recommendation, rendering advice, investigation, other.	Please describe the task you are required to perform with respect to the particular matter.  <b>As Superintendent, I am tasked with the responsibility to annually submit a detailed budget to operate the Water Department to my Board of Water Commissioners for their review and subsequent approval. Although I'm not involved in the approval process the amount I am compensated for to perform "on call" duty is included in the budget that I submit to my Board of Water Commissioners.</b>
	<b>FINANCIAL INTEREST IN THE PARTICULAR MATTER</b>
<b>Write an X by all that apply.</b>	<input checked="" type="checkbox"/> I have a financial interest in the matter.  <input type="checkbox"/> My immediate family member has a financial interest in the matter.  <input type="checkbox"/> My business partner has a financial interest in the matter.  <input type="checkbox"/> I am an officer, director, trustee, partner or employee of a business organization, and the business organization has a financial interest in the matter.  <input type="checkbox"/> I am negotiating or have made an arrangement concerning future employment with a person or organization, and the person or organization has a financial interest in the matter.

Financial interest in the matter	Please explain the financial interest and include a dollar amount if you know it. <b>Compensation that I receive to perform "on call" duty is included in the budget that I as Superintendent am responsible to submit for recommendation to my Board of Water Commissioners. The amount is \$250.00 every three weeks and \$75.00 every third holiday.</b>
Employee signature:	
Date:	

**DETERMINATION BY APPOINTING OFFICIAL**

	<b>APPOINTING AUTHORITY INFORMATION</b>
Name of Appointing Authority:	
Title or Position:	
Agency/Department:	
Agency Address:	
Office Phone:	
Office E-mail	
	<b>DETERMINATION</b>
Determination by appointing authority:	As appointing official, as required by G.L. c. 268A, § 19, I have reviewed the particular matter and the financial interest identified above by a municipal employee. I have determined that the financial interest is not so substantial as to be deemed likely to affect the integrity of the services which the municipality may expect from the employee.
Appointing Authority signature:	
Date:	
Comment:	

Attach additional pages if necessary.

**The appointing authority shall keep this Disclosure and Determination as a public record.**



**Town of Townsend MA Water Department  
Fitchburg Rd 500KG Water Ground Storage Tank**

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**Comparing Tank Asset Management to the Run to Failure Approach**

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# Report Purpose

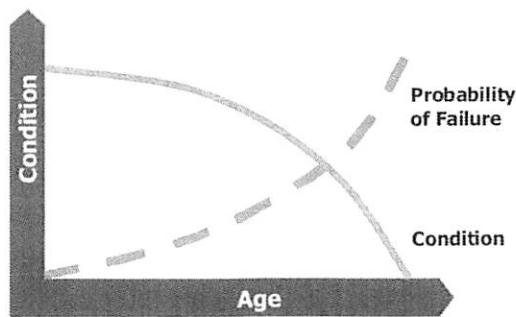
The purpose of this report is to demonstrate the benefits and advantages of a comprehensive tank maintenance asset management program when compared to the conventional approach of low bid.

# State of the Nation

The state of the nation's infrastructure has been a growing concern. The American Society of Civil Engineers report card for America's infrastructure gave the water industry a D grade in 2013. While age is a contributing factor, the lack of maintenance, poor planning and the run to failure model has created a very reactive environment with significant cost repercussions when it is time to repair or replace.

# Asset Management

Asset management has been deemed a viable solution to address the nation's infrastructure and establish sustainability of assets. Through practical asset management the water industry can maintain a desired level of service of assets at the lowest life cycle cost. Planning continuous condition assessment, proactive and preventative maintenance, the best appropriate rehabilitation and repairs at the right time ensures your critical assets will operate at peak performance. By applying asset management principles, water systems establish effective financial management, planned capital and operational expenses, lowest asset life cycle cost and sustainability. Comprehensive asset management planning offers risk management and avoids running assets to failure and the associated extraordinary financial implications.



# Tank Maintenance & Asset Management Program



The Utility Service Group (USG) tank maintenance and asset management program was established in 1985 and applies the basic principles of asset management to effectively maintain and preserve tank assets at the lowest life cycle cost. The program is an agreement with USG and the tank owner for USG to provide risk mitigation and risk transfer as the single point tank professional that provides annual condition assessments, proactive and predictable maintenance, planned rehabilitation and repairs with a cost effective financial plan. USG services ensure the tank asset operates at optimal performance in order to provide a level of service that meets regulatory requirements and customer demand for the highest water quality.

## Benefits of USG Program



There are many benefits of the USG tank maintenance and asset management program. Here are several examples that are realized by USG customers:

- Prolonged asset life making it available for future generations
- Meet consumer demands with a focus on sustainability
- Set rates based on sound operational and financial planning
- Budgets focused on activities critical to sustained performance
- Meet service expectations and regulatory requirements
- Improved response to emergencies
- Improved public and private perception of highly visible, critical system assets
- Supports water quality management while in storage with best practices
- Reduce overall costs for both operations and capital expenditures
- Risk management – sanitary, structure, security, safety, financial (USG assumes risk in year 1)

## Experience



Established in 1963, USG is the largest tank maintenance and management firm in the nation and performs over 8,000 inspections and 1,300 renovations annually. Over 6,000 assets are maintained through USG programs. *Resumes, case studies, references, referral letters are available upon request.*

# Scope of Work



Based on a professional evaluation of the asset condition, the following recommendations for tank rehabilitation are prescribed based on EPA, AWWA, OSHA and local regulatory guidelines. The five general categories for rehabilitation are safety, security, sanitary, structure and coatings.

## Exterior Renovations

- EXTERIOR OVERCOAT - *recommended in 2015/2016*
  - Hand and power tooling localized failure
  - 2 coats of TNE MEC coating system

## Interior Renovations

- FULL INTERIOR RENOVATION - *recommended in 2015/2016*
  - SP10 (near white) blast
  - Pit fill/welding as needed
  - Apply TNE MEC 100% solids coating system (see specification)

## Repair Renovations

### Sanitary Improvements

- Replace overflow screen and install flapper
- Seal vent holes on sidewall at roof plate juncture and repair holes on roof due to missing rivets

### Safety Improvements

- Secure dome ladder in place
- Replace roof hatch with neck and new hatch
- Install 6' handrails on both sides of access ladder on roof
- Replace one manway with a 24" round bolted manway
- Install a flex cable safety climb on dome ladder

### Security Improvements

- Install an 8' aluminum access ladder gate

### Structural Improvements

- Install dual chamber frost/insect proof vent

# Service Schedule



Based on over 50 years of experience, USG is prescribing the following service schedule for the Fitchburg Rd tank. These services offer the necessary predictable, preventative and proactive maintenance to effectively preserve the tank at the lowest life cycle cost. In order to manage risk and ensure the tank is operating at best level of service, the condition assessments, cleaning, maintenance and coating schedule are recommended. The schedule demonstrates annual services over a 15 year period with an optional 5 year extension option. Per MA law the agreement is a maximum of 15 years with the option of renewing for 5 more. The additional 5 years allows for the continuation of services, risk mitigation, warranty and provides opportunity to plan for the year 20 renovation.

# Service Schedule

Year 1 - 2016	Year 2 - 2017	Year 3 - 2018	Year 4 - 2019	Year 5 - 2020	Year 6 - 2021	Year 7 - 2022
Full tank renovation Repairs Risk transfer	Visual inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	ROV inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	Visual inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	BIOFILM washout Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	Visual inspection Exterior pressure wash Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	ROV inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation
Year 8 - 2023	Year 9 - 2024	Year 10 - 2025	Year 11 - 2026	Year 12 - 2027	Year 13 - 2028	Year 14 - 2029
Visual inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	ROV inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	<b>Exterior overcoat</b> BIOFILM washout Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	Visual inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	ROV inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	Visual inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	BIOFILM washout Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation
Year 15 - 2030	Renewal option	Year 16 - 2031	Year 17 - 2032	Year 18 - 2033	Year 19 - 2034	Year 20 - 2035
ROV inspection Exterior pressure wash Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	Negotiate next interior renovation and exterior overcoat and spread costs over additional 5 years under renewal option.	Visual inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	ROV inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	Visual inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	ROV inspection Condition report Coating management Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation	Exterior overcoat Interior touchup Repairs as required Emergency service Warranty Portal to data GASB34 value Risk mitigation



# Pricing and Fees

USG offers fair and competitive pricing for services. Under the tank maintenance and asset management program, USG offers the benefit of spreading the initial upfront renovation (UR) costs over several years. After the renovation cost is paid, an annual base fee is applied for ongoing services, maintenance, future renovations and warranty. The following illustrates a financial plan available for the Fitchburg Rd tank:

USG Program Pricing Schedule over 15 Years - with 5 year renovation spread

YEAR	PAYMENT	Description
1	\$ 101,809	UR payment (1 of 5)
2	\$ 101,809	UR payment (2 of 5)
3	\$ 101,809	UR payment (3 of 5)
4	\$ 101,809	UR payment (4 of 5)
5	\$ 101,809	UR payment (5 of 5)
6	\$ 20,296	Annual base program fee
7	\$ 21,015	Annual base program fee
8	\$ 21,759	Annual base program fee
9	\$ 22,529	Annual base program fee
10	\$ 23,327	Annual base program fee
11	\$ 15,009	Annual base program fee
12	\$ 15,540	Annual base program fee
13	\$ 16,090	Annual base program fee
14	\$ 16,660	Annual base program fee
15	\$ 17,249	Annual base program fee



**First 5 payments** include the UR cost of \$434,564 and 4 annual base fees at \$18,620 = \$74,480  
 $\cdot$   $\$434,564 + \$74,480 = \$509,044$   
 $\cdot$   $\$509,044 / 5 = \$101,809$



*The **annual base fee** is adjusted annually for industry inflation not to exceed 5% per contract.*

*The **annual base fee** covers all program services including future renovation, warranty and risk mitigation.*

# Annual Fee Summary

The annual base fee is based upon known industry costs for maintenance, renovation and assessment of tanks. The fees include all services as prescribed in the service schedule. Over the projected life cycle of the Full Service Asset Management Program the annual amount in the pricing proposal covers ongoing, annual maintenance and services related to program.

The following list encompasses the annual services included in the cost estimate:

1. Annual visual inspections
2. Periodic washout inspections with chemical Bio-film removal cleaning
3. Periodic ROV inspections
4. Exterior tank cleaning
5. On call emergency service
6. Allocation for required engineering services
7. Access to the USG internet portal for all tank and program related data.
8. Annual inspection report preparation, delivery and consultation
9. Permits for inspections and renovation work as required
10. Touch up coatings and associated costs (labor, materials, rigging, aerial lifts, etc.)
11. Repairs as required in order to maintain peak performance and keep tank in compliance
12. Pollution liability insurance allocation
13. Other insurance allocations
14. Complete coating renovations at prescribed intervals. (Every 10 years for tank exterior, every 20 years for tank interior)
15. Any other miscellaneous expenses related to the upkeep and preservation of the tank asset as needed and discovered as part of the annual inspection process

The Full Service Asset Management Program also includes the inherent risk mitigation at no charge. If there is a failure of the coating system or a repair fails after several years, the cost to rectify the problem is borne by USG. Peace of mind with a single point tank professional.

# Inflation & Key Cost Items



In order to project future costs of predictable maintenance and renovations, USG uses historical data to calculate the projected annual base fees. Internal historical data is used to calculate inflation with 50 years of cost structure. To keep it simple, the short explanation is the current inflation rate is 2.07% (based off of the CIP-U calculations). We also figure current oil prices where each job has products that are tied to oil and our equipment runs on diesel fuel. USG also assumes a great deal of liability taking on associated risks for managing tanks and the associated potential hazards. This requires a significant amount of insurance which sees substantial fluctuation year to year. In addition to these costs, we also maintain the tank up to code with AWWA, SSPC, OSHA and EPA standards and account for any costs that impact our processes over the duration of a contract.

Annual base fees are evaluated and adjusted accordingly annually with a maximum increase of 5% per agreement with the tank owner. By writing a 5% cap into our contracts, USG is protecting our customers and limiting their exposure to an ever changing economic environment. However, we need to account for our future costs.

The following reflects the data used to calculate the inflation factor and provides a breakdown of key cost items.

1. Labor costs are the first factor. Labor escalates annually based on supply and demand of specialized labor force that is trained and suitable for safely working with abrasive blasting and coatings at heights that routinely exceed 150 feet above the ground.
2. Materials that include coatings (paint) and abrasives. These products, due their specialty nature tend to increase in cost at a rate higher than the CPI. The key supplier of coatings to USG raised prices for 2015 by nearly 4% over 2014.
3. Insurance costs escalate annually and are typically tied to the company safety record. USG maintains a very strict, and high standard of safety for our employees and subcontractors, but due to the high risk of working at heights with heavy equipment the premiums tend to increase at greater rate than other lower risk companies.
4. Fuel is a key cost component to operating the business. Not only does USG have relatively high transportation expenses due to the number of vehicles owned and operated, the company also runs heavy equipment such as generators, dust collectors, steel grit recycling machines, and compressors that run on diesel fuel.

There are other less critical factors such as lodging, transportation, equipment rentals, etc. that also impact USG's costs, but the inflation factor used to set pricing for the tank asset management programs is primarily driven by the 4 items above.

5.1



401 Elm Street  
Marlborough, MA 01752

May 12, 2015

Town of Townsend  
Paul Rafuse

978-230-3001 cell  
978-597-2212 ph.  
[prafuse@townsend.ma.us](mailto:prafuse@townsend.ma.us) email

Please find below a quote for a **Ford Fusion Hybrid SE** per the State of Massachusetts vehicle procurement contract# OVM-10 M.G.L. c.30B applies to the procurement of all commodities quoted. Contract items have been collectively purchased pursuant to M.G.L. c.30B sec. 1c and M.G.L. c.7 sec 22B. The governmental body is responsible to determine the applicability of M.G.L. c30B to off contract items, including but not limited to, off contract items that have already been properly procured under M.G.L. c30B sec. 1c and M.G.L. c.7 sec. 22A (purchases from a vendor on contract with the Commonwealth), other contracts procured under M.G.L. c 30B sec. 1c and M.G.L. c.7 sec. 22B or any M.G.L. c. 30B contract between the vendor and the jurisdiction. All off contract items must be procured under M.G.L. c. 30B.

QF57-15	Ford Fusion Hybrid SE FWD	\$ 24,106.00
J4	Color: Deep Impact Blue	included
	2.0 I4 Atkinson	included
	6 Spd Automatic Transmission	included
	Power Group Package	included
	AM/FM CD Player Stereo Radio	included
	Air Conditioning	included
	Rear view Camera	included
	Remote Key less Entry	included
	SYNC	included
	Whelen (4) Vertex Hideaways (2) front (2) rear amber	505.00
	Switch for lighting	50.00
	Graphics package (door seals)	295.00
<b>Total Contract Price:</b>		<b>\$ 24,956.00</b>
<b>Trade In:</b>		<b>\$ (5,900.00)</b>
<b>Total w/ Trade In:</b>		<b>\$ 19,056.00</b>

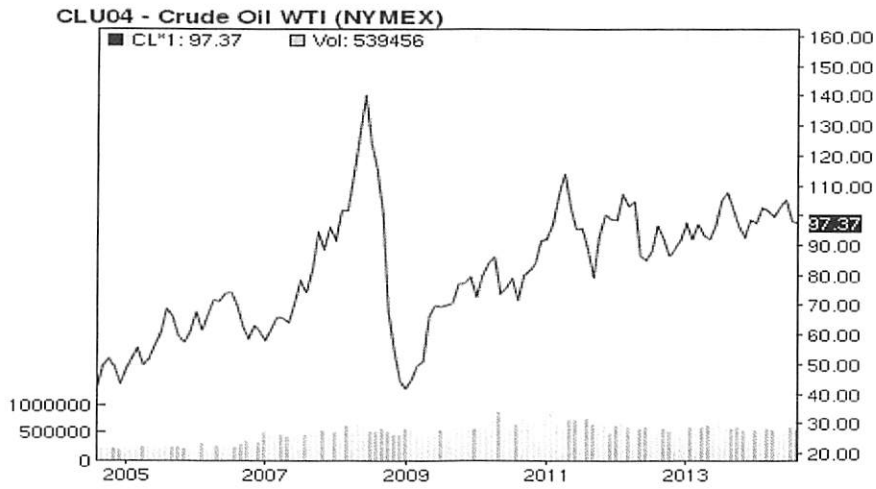
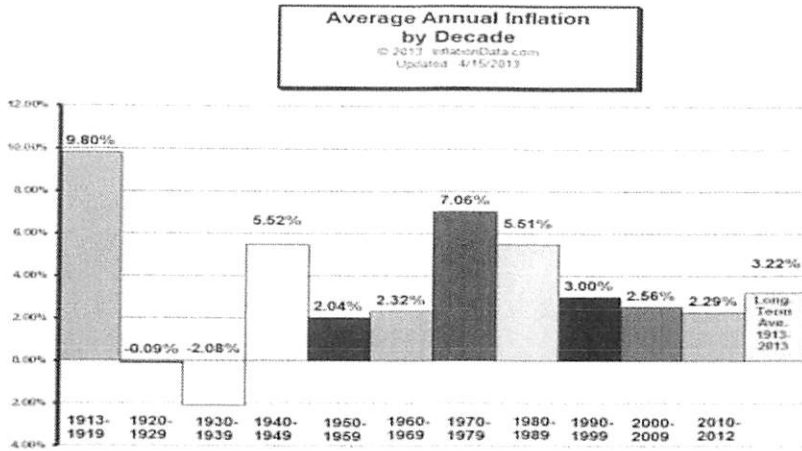
Sincerely,

Jay Matisko  
Fleet Manager

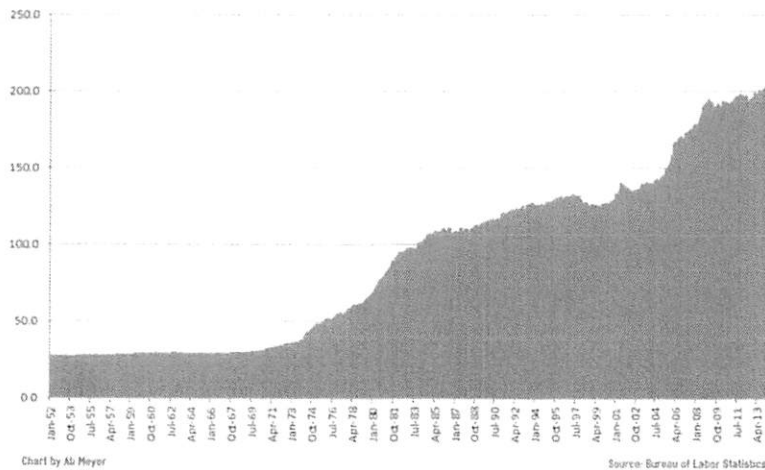
Vehicle  
Ordered  
8/11/15  
Jay Matisko

8100  
11,000

Examples of inflation and volatility.



**Electricity Price Index Hit All-Time High in January**  
Seasonally Adjusted Electricity Index



# Comparing Approaches



The conventional approach of managing water system assets has been run to failure and deal with extraordinary cost of renovation or replacement. This can be a financial crisis if funds have not been set aside or allocated. Even worse when an asset runs to failure, it can result in catastrophe, significant damage and have serious impact on public safety, economy, and ability to provide safe clean drinking water to the public.

Through planned maintenance we can prevent the degradation and failure of tank assets and avoid the associated negative impact of the conventional approach. Often the conventional approach awards tank work to low bidder who provides a one year warranty on the coatings and workmanship. In some instances a thorough experience and qualifications process does not take place. This approach is not the most advantageous as it results in poor workmanship, low quality and premature failure of coatings. Typically the costs associated with these issues fall on the tank owner.

The USG program shifts risk mitigation from the owner to USG on day one. It becomes the responsibility of USG to properly maintain the tank with all workmanship and coatings under complete warranty. USG manages these risks through planned activities and budgeting.

# Life Cycle Cost Savings



While there are many benefits and advantages of using a single point tank professional to maintain the tank asset and assume the associated risk, this approach also offers savings over the tank life cycle. A key component of asset management is the reduction of life cycle cost. The following illustrates the added benefit of financial management and cost savings of the USG program when compared to the conventional approach of low bid and associated costs projected over twenty years.

See the following two life cycle cost comparison tables.

# Life Cycle Cost Savings

Comparing the USG Asset Management program to the conventional low bid – run to failure approach:

Year	USG Asset Management Program 5 year UR spread option	Price	Traditional Run to Failure Approach	Price
1	Upfront renovation (UR), all services, transfer of risk day 1	\$ 101,809	Do nothing – run to failure	
2	All program services, warranty	\$ 101,809	<i>Tank owner owns risk</i>	
3	All program services, warranty	\$ 101,809	<i>Tank owner owns risk</i>	
4	All program services, warranty	\$ 101,809	<i>Tank owner owns risk</i>	
5	All program services, warranty	\$ 101,809	Inspection	\$ 4,500
6	All program services, warranty	\$ 20,296	<i>Tank owner owns risk</i>	
7	All program services, warranty	\$ 21,015	<i>Tank owner owns risk</i>	
8	All program services, warranty	\$ 21,759	<i>Tank owner owns risk</i>	
9	All program services, warranty	\$ 22,529	<i>Tank owner owns risk</i>	
10	Overcoat, All program services	\$ 23,327	Inspection	\$ 5,000
11	All program services, warranty	\$ 15,009	<i>Tank owner owns risk</i>	
12	All program services, warranty	\$ 15,540	<i>Tank owner owns risk</i>	
13	All program services, warranty	\$ 16,090	<i>Tank owner owns risk</i>	
14	All program services, warranty	\$ 16,660	<i>Tank owner owns risk</i>	
15	All program services, warranty	\$ 17,249	Inspection	\$ 5,500
	Cost of program over 15 years:	\$ 698,516	Full Exterior & Interior Renovation	\$ 829,722
	5 year renewal option		Engineering Fees at 10%	\$ 82,927
	Option to negotiate an additional 5 years maintenance and address another exterior overcoat and new interior in year 20.		Legal and Bond Fees at 3%	\$ 24,892
			Loan Interest over 15 Years at 1.5%	\$ 97,357
			Run to failure cost over 15 years:	\$1,049,898

Note: See Scope of Work, Service Schedule and Annual Fee Summary for summaries of all program services

# Risk Management

In year one under the tank maintenance and asset management program, USG assumes the inherent risk mitigation for maintenance of the tank and tank structure. The extended warranty ensures coatings are maintained each year under contract. The mixer and all workmanship is also included in the extended warranty. The program avoids going to failure and the tank is in best standard of service for the water system. Known predictable annual rates avoids the unpredictable ebb and flow of major renovation costs.

# Value...More for your dollar

When allocating dollars, today's water industry is faced with the challenge of having many needs with limited funding. So it is always a wise decision to get as much for your dollar as possible.

Understanding value and cost savings when purchasing is critical. The following illustrates a value comparison of the USG tank maintenance and asset management program when compared to the conventional approach; low bid, one year warranty and the tank owner managing tank maintenance and owning the associated risks.

## More for your dollar with Tank Maintenance & Asset Management

BENEFITS & SERVICES	ASSET MANAGEMENT APPROACH	TRADITIONAL APPROACH
All Risk and Liability for tank maintenance shifts	✓ (from tank owner to USG)	
A single point tank professional	✓	
Spread cost over several years	✓	
Flatten budget with Annual Fee	✓	
Change orders	NA	✓
Inspections	Annually with detailed reports:	every 5 years
	- Visual Inspections	
	- ROV Inspections	
	- BIOFILM Washout Inspections	
Exterior cleaning	✓	
Emergency Service 24/7	✓	
Graffiti Removal	✓ (considered emergency service)	
Warranty on Coatings	Indefinite under annual contract	1 Year
Warranty on Workmanship	Indefinite under annual contract	1 Year
Tank Maintenance and Repairs	Indefinite under annual contract	
Secure Online Portal for Information Access	✓	
Future Exterior and Interior Renovations	✓	✓
Tank maintains value	✓ (GASB34 compliant program)	

**Asset Management provides the best solution for maintaining water quality & preserving your tank asset**



# Procurement & Legislation



**Part I Administration of the Government, Title VII Cities, Towns and Districts, Chapter 40 Powers and Duties of Cities and Towns, Section 62 Contracts for the inspection, maintenance, repair or modification of water storage facility authorized (62-69)**

Website references:

Chapter 40 Section 62

*Contracts for the inspection, maintenance, repair or modification of water storage facility authorized*  
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section62>

Chapter 40 Section 63

*Term of contract awarded under Sec. 62 and option for renewal or extension; contents of contract and obligations thereunder; requirements relating to capital modifications, capital repairs, installation of equipment and systems or second interior or exterior coating*  
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section63>

Chapter 40 Section 64

*Solicitation of proposals; statement of compliance with occupation health and safety requirements*  
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section64>

Chapter 40 Section 65

*Acceptance of proposal and award of contract; notice; statement of reasons for acceptance*  
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section65>

Chapter 40 Section 66

*Terms and conditions of contract awarded under Secs. 61 to 69; bond or other security for the obligation of selected offeror*  
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40/Section66>

**Part I Administration of the Government, Title III Laws Relating to State Officers, Chapter 30 Uniform Procurement Act, Section 6 Competitive sealed proposals; requests for proposals; additional evaluation criteria**

Website reference:

Chapter 30B Section 6

*Competitive sealed proposals; requests for proposals; additional evaluation criteria*  
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleIII/Chapter30B/Section6>

# Key Procurement Points



- Security - full accumulated amount are guaranteed by a bond, letter of guaranty or other form of guaranty to be submitted on an annual basis and approved by the governmental unit for the 100 percent accumulated amount.
- RFP vs Bid – allows for full qualification of the right plan and contractor to provide the appropriate services ongoing and eliminates the risk of poor quality and running to failure.
- Term - not exceeding 15 years, and an option for renewal or extension of inspection, maintenance, repair or modification services for 1 additional term not exceeding 5 years.

# Conclusion & Commitment



At Utility Service Group, we understand the challenges of today's water industry. From aging and failing infrastructure, to stricter regulatory compliance for water quality, to the lack of funding available to take care of these critical needs.

From source to tap, Utility Service Group offers solutions to address these specific challenges you face. Through practical asset management programs we provide comprehensive asset condition assessments, the necessary renovations and ongoing maintenance to help you effectively preserve your critical system assets. And through modern technologies and better practices, Utility Service Group help systems create a cleaner, well maintained system to help you manage water quality more effectively and efficiently. Our programs offer the financial flexibility to help with short and long term budget strategies to address the financial hurdles of getting things done in a timely manner.

If you're tired of the traditional Band-Aid approach and interested in sustainability of your water system, we at Utility Service Group can help ensure your water system assets are preserved for future generations at the lowest life cycle cost and help you offer safer, clean drinking water to your community.

The program we have provided for the your tank offers a solution for addressing an immediate need and provides a plan for ongoing maintenance to maintain optimal performance with a sound financial budget strategy.

USG Contact Information:  
Scott B. Kelley  
24 Fellows Rd  
Brentwood, NH 03833  
603-724-8226  
skelley@utilityservice.com

## CASE STUDY

### **Thermally Homogenous But Chemically Stratified: Active Mixing Achieves Uniform Residual Levels in 5 MG Concrete Tank.**

#### **The Problem**

Pinellas County, Florida is typical of many major metropolitan water systems, with over 700,000 customers, 2,000 miles of piping and several large water storage facilities. Like many major metropolitan water systems, Pinellas County Department of Environment and Infrastructure (DEI) has seen a decline in water usage over the last decade, both due to active water conservation programs and downturns in the regional economy. This decrease in water usage has increased water age, and coupled with warm southern temperatures, has increased incidences of nitrification in parts of their chloraminated system.

In 2000, Pinellas County DEI embarked on a major upgrade in anticipation of their conversion to chloramines as a secondary disinfectant and installed passive mixing systems in each of their ground-level water storage tanks. Once the chloramine conversion was complete in 2002, DEI found that nitrification was still an issue in some of their storage tanks. To reduce nitrifying bacteria and biofilm growth, DEI performed a chlorine maintenance (or free chlorine burn) each spring in which the secondary disinfectant was switched from chloramines to free chlorine for several weeks. DEI also increased its flushing, averaging roughly 255 million gallons of water per year.

In 2009, Pinellas County DEI experienced its earliest recurrence of nitrification after chlorine maintenance in the beach community at the southern end of the County. Despite the presence of passive mixing systems in their tanks, operators at DEI were aware that mixing conditions were not optimal. One indication: as tanks were drained, operators saw a steady drop of chlorine levels, suggesting that the upper layers of water in the tanks were depleted of disinfectant residual.

“These storage tanks were designed to be full,” explained Royce Rarick, Senior Water Plant Operator at Pinellas County DEI. “We would watch the residual drop as the tank was pumped out.” Temperature measurements at various levels within the tank rarely showed the presence of thermal stratification, but the variations in chlorine levels (and the episodes of nitrification) strongly suggested that the existing mixing systems were unable to maintain homogeneous water chemistry.

#### **The Solution**

Anticipating further decreases in water demand (due to the loss of a secondary water customer), DEI asked Jones Edmunds & Associates, Inc. to study their distribution system and propose infrastructure and operational improvements to reduce the risk of nitrification and the need for large bulk water turnover by flushing. Jones Edmunds recommended the use of active mixers to improve mixing in the storage tanks and contacted Utility Service Group to set up a demonstration test using a PAX Water Mixer. Unlike passive mixing systems, which only introduce momentum into the tank during the fill cycle, PAX Water’s active mixing systems operate 24/7, creating a powerful flow pattern within the tank and ensuring uniform distribution of disinfectant residual.

## CASE STUDY

### Thermally Homogenous But Chemically Stratified: Active Mixing Achieves Uniform Residual Levels in 5 MG Concrete Tank.

#### The Solution

In order to confirm that active mixing would be sufficient to overcome the chemical stratification inside the tanks, Pinellas County DEI conducted a performance trial in which temperature and residual would be monitored. Two 5 MG tanks at the North Booster Pump Station were selected (Figure 1). A PAX Water Mixer (PWM400) was installed in one tank and the other tank was left as a control (Figure 2). Both tanks were filled and drained only from their outlet sumps – simulating worst-case hydraulic conditions inside the tanks. Temperature probes were installed and grab samples were taken from the bottom, middle and top of each tank every day over a 1-week period.

Initially, when the PAX Water Mixer was installed, power was inadvertently set to only 50% of its total power rating.

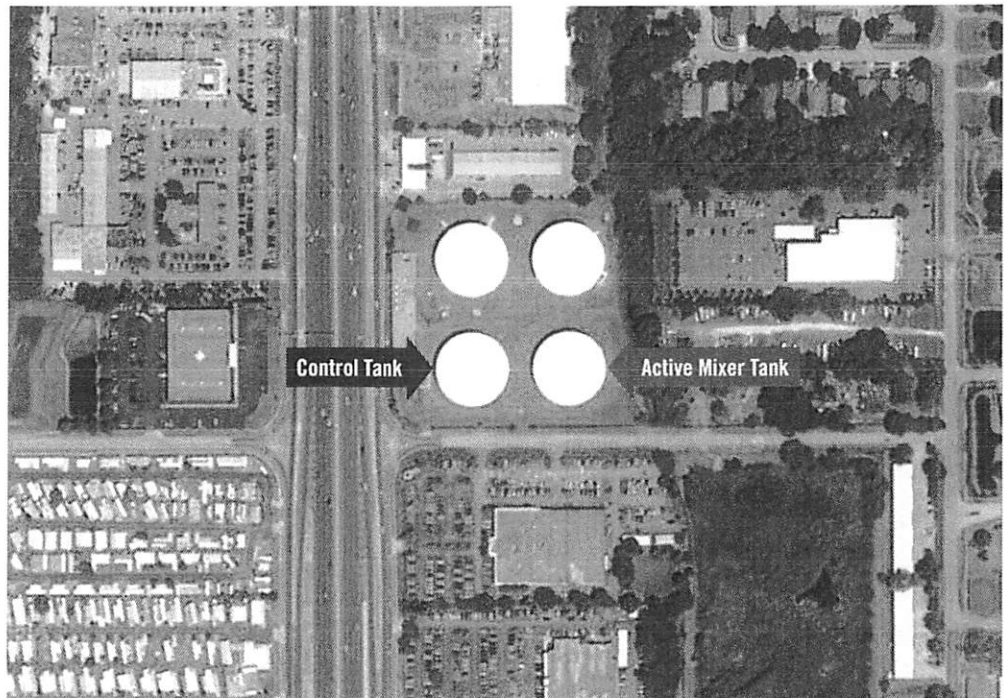


Figure 1. Two 5 MG tanks at the North Booster Pump Station were used to evaluate the effectiveness of active mixing to eliminate chemical stratification. The tank on the bottom left was used as a control, while the tank on the bottom right was used to test the active mixing system.

## CASE STUDY

### Thermally Homogenous But Chemically Stratified: Active Mixing Achieves Uniform Residual Levels in 5 MG Concrete Tank.

#### The Solution



Figure 2. The PAX Water Mixer was installed in a 5MG tank with an existing passive mixer (shown behind PAX Water Mixer in above image).

#### The Conclusion

The temperature data showed only slight differences in thermal stratification between the control tank and the actively mixed tank. The control tank showed slightly more thermal stratification at the top of the tank, but the magnitude was small, averaging only 0.2 °C during the study (Figure 3). From the temperature data alone, both tanks would appear to be sufficiently mixed.

It was the chlorine residual data that told the real story. In the control tank, residual chlorine quickly became stratified, with levels 0.5 to 0.9 ppm lower at the top of the tank compared to the bottom. However, in the actively mixed tank, chlorine residual levels were within 0.1 ppm of each other (Figure 4). The data revealed that while thermal conditions remained relatively uniform, significant chemical stratification quickly developed. The active mixer was able to restore homogeneous chlorine distribution throughout the tank.

In a 2013 Florida Water Resources Conference presentation<sup>1</sup>, Jones Edmunds reported their findings: significant chemical stratification can exist inside water tanks that show little or no thermal stratification. The active mixing system installed in the 5 MG tank was able to eliminate the chemical stratification even with the worst-case inlet/outlet conditions. "The most impressive part is that even at 50% of the mixer's total power rating, it still provided great performance," Chris Baggett, Senior Engineer at Jones Edmunds.

<sup>1</sup> Baggett, C. C., Horvath, J. H., Rosario, R. A., Hall, J., and Powell, R., (2013) *Controlling Nitrification within Pinellas County's Ground Storage Tanks*. Florida Water Resources Journal v. 65, no. 12, p. 22-26.

# CASE STUDY

## Thermally Homogenous But Chemically Stratified: Active Mixing Achieves Uniform Residual Levels in 5 MG Concrete Tank.

### The Conclusion

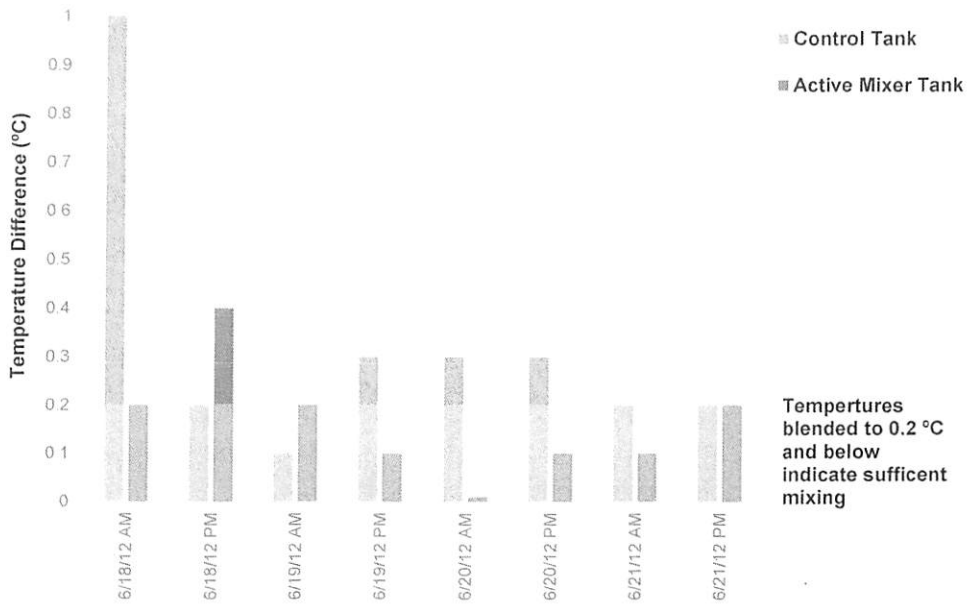


Figure 3. Temperature measurements from the bottom and top of both tanks showed mild thermal stratification. The tank with active mixing (blue bars) showed a slightly smaller amount of thermal stratification than the control tank (yellow bars).

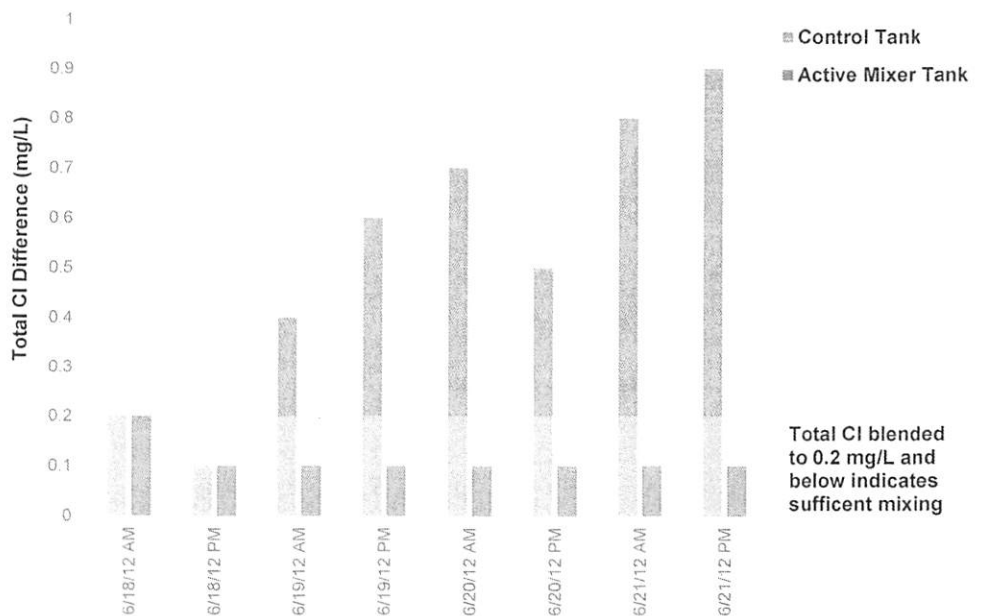
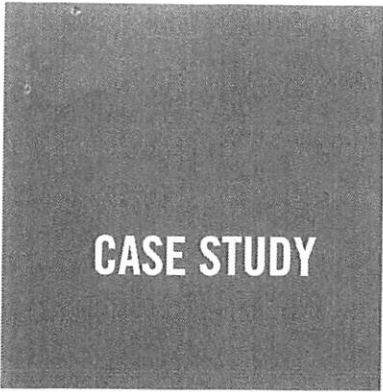


Figure 4. Chlorine measurements from the bottom and top of the tanks showed major differences. The control tank (yellow bars) showed substantial chemical stratification for much of the trial. However, the tank with the active mixing system (blue bars) showed uniform chemical conditions (within +/- 0.1 mg/L).



## Thermally Homogenous But Chemically Stratified: Active Mixing Achieves Uniform Residual Levels in 5 MG Concrete Tank.

### The Conclusion

By the end of 2013, Pinellas County DEI had installed PAX Water Mixers in eight of their tanks. Active mixing was not the only recommendation made by Jones Edmunds and adopted by Pinellas County DEI. Operational levels in some of the water storage tanks were lowered to reduce water age and pressures were adjusted in some parts of the distribution system to improve flows. Managers also added a second chlorine maintenance event at the end of the warm season and, in one area a water storage tank was taken offline. As a result, Pinellas County DEI saw a substantial reduction in their flushing (Figure 5). From 2011-2013, monthly flushing rates averaged 35 MG during the first half of the year, whereas in 2014, monthly flushing rates averaged just 17 MG for the same time period (just below Pinellas County's target of 20 MG/month).

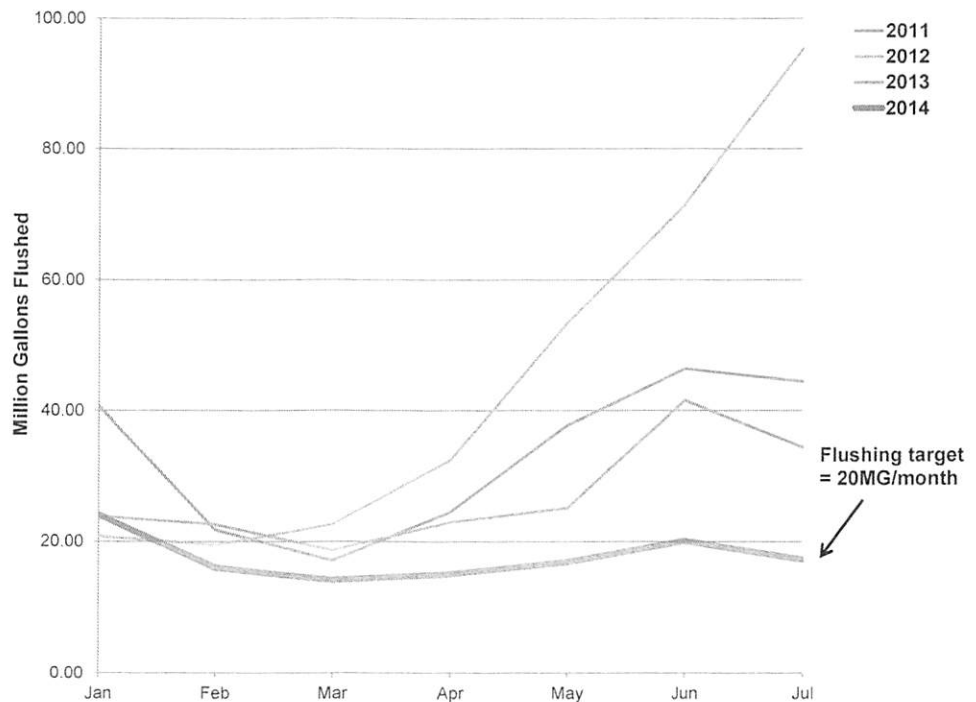


Figure 5. Pinellas County DEI has a flush target of 20MG/month. From 2011-2013, monthly flush rates averaged 35 MG during the first half of the year. After the majority of the PAX Water Mixers were installed by early 2014, flush rates averaged just 17 MG/month for the same time period.

“Between the combination of mixers going in and running the tanks lower, we are definitely maintaining better residuals than in the past, and we are flushing less than we had been.”

— Royce Rarick, Senior Water Plant Operator, Pinellas County DEI

## CASE STUDY

### **Thermally Homogenous But Chemically Stratified: Active Mixing Achieves Uniform Residual Levels in 5 MG Concrete Tank.**

#### **Key Takeaways**

1. Thermal uniformity does not guarantee good mixing: major differences in disinfectant uniformity can exist inside a tank that is thermally uniform.
2. An active mixing system (even operating at 50% of its total power rating) provided sufficient mixing power to maintain fully-mixed conditions in a 5 MG storage tank, eliminating both thermal and chemical stratification.



5.1



401 Elm Street  
Marlborough, MA 01752

May 12, 2015

Town of Townsend  
Paul Rafuse

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978-597-2212 ph.  
[prafuse@townsend.ma.us](mailto:prafuse@townsend.ma.us) email

Please find below a quote for a **Ford Fusion Hybrid SE** per the State of Massachusetts vehicle procurement contract# OVM-10 M.G.L. c.30B applies to the procurement of all commodities quoted. Contract items have been collectively purchased pursuant to M.G.L. c.30B sec. 1c and M.G.L. c.7 sec 22B. The governmental body is responsible to determine the applicability of M.G.L. c30B to off contract items, including but not limited to, off contract items that have already been properly procured under M.G.L. c30B sec. 1c and M.G.L. c.7 sec. 22A (purchases from a vendor on contract with the Commonwealth), other contracts procured under M.G.L. c 30B sec. 1c and M.G.L. c.7 sec. 22B or any M.G.L. c. 30B contract between the vendor and the jurisdiction. All off contract items must be procured under M.G.L. c. 30B.

QF57-15	Ford Fusion Hybrid SE FWD	\$ 24,106.00
J4	Color: Deep Impact Blue	included
	2.0 I4 Atkinson	included
	6 Spd Automatic Transmission	included
	Power Group Package	included
	AM/FM CD Player Stereo Radio	included
	Air Conditioning	included
	Rear view Camera	included
	Remote Key less Entry	included
	SYNC	included
	Whelen (4) Vertex Hideaways (2) front (2) rear amber	505.00
	Switch for lighting	50.00
	Graphics package (door seals)	295.00
<b>Total Contract Price:</b>		<b>\$ 24,956.00</b>
<b>Trade In:</b>		<b>\$ (5,900.00)</b>
<b>Total w/ Trade In:</b>		<b>\$ 19,056.00</b>

Sincerely,

Jay Matisko  
Fleet Manager

*Vehicle  
Ordered  
8/11/15  
Jay Matisko*

5.2

Five Centennial Drive  
Peabody, MA 01960-7985  
tel: 978-532-1800 fax: 978-877-0100  
www.westonandsampson.com



January 6, 2015

Townsend, MA  
Project No. M2140254

Mr. Paul Rafuse  
Superintendent  
Townsend Water Department  
540 Main Street  
West Townsend, MA 01474

**Witch's Brook Booster Station  
Electrical Upgrade Proposal**

Dear Mr. Rafuse:

Weston & Sampson CMR, Inc. (W&S CMR) is pleased to present this proposal to upgrade the electrical equipment from 208-volt to 480-volt at the Witch's Brook booster stations, as described herein.

**Scope of Services -  
Surplus Equipment**

1. Remove existing transfer switch, main disconnect switch, transformer, branch circuit panels, and VFD disconnect.
2. Furnish and install the following 277/480-volt, 3 phase rated service equipment on the building:
  - Main panel board (surplus)
  - Step down transformer (480-volt, 120/240v) (surplus)
  - Branch circuit panel (surplus)
  - 200-amp disconnect switch (surplus)
3. Furnish and install a 3-inch diameter and a 2-inch PVC schedule 80 conduit from the building with the existing generator and existing 480-volt service to other pump building. This will eliminate the requirement of the utility upgrading service at the station.
4. Furnish and install underground marking tape above new backfilled conduits.
5. Furnish and install new aluminum feeder conductors in new 3-inch conduit between the two buildings.
6. Furnish and install a new 200 amp breaker in the existing 400 amp panel.
7. Terminate the conductor on the new breaker, and on the disconnect at other building.

**Notes:**

1. W&S CMR has several pieces of surplus equipment in our shop. As a way to save money, we offered to install this equipment. We will warranty the equipment for a period of one year.

Massachusetts Connecticut Rhode Island New Hampshire Maine Vermont New York Pennsylvania New Jersey South Carolina Florida

*When it's essential...it's Weston&Sampson®*

2. This proposal assumes the new (surplus) service equipment will be located in the same location and side of the building as the existing. Locations other than this may increase the price if additional conduit and wire are necessary.
3. Any costs incurred from the utility company for their work is additional (If required)
4. Any and all excavation, backfill, concrete encasement (if required) will be performed by the Town.
5. Trenches will require sand bedding by town before conduits can be installed.
6. Aluminum feeders have been used for this quote. Copper wire will increase the cost.
7. Equipment to pull the new feeders has not been figured as Town will be using their equipment for this purpose
8. The existing generator is undersized and will not run both pumps at the same time. Only one pump at a time will be able to be run off the existing 70KW generator

**Schedule -**

We will initiate work under this Agreement following formal acceptance by the Town of Townsend. We agree to provide services for this project starting within 72 hours of formal acceptance of this Agreement.

**Fee -**

The costs for the above Scope of Services are listed below:

The cost for Tasks 1 through 7 of the Scope of Services (surplus equipment) is a lump sum of \$31,250.

The above pricing is based on prevailing wage rates. Owner to provide rate sheets prior to commencement of work.

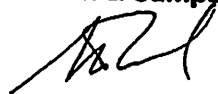
Services will be provided as described herein and in accordance with the attached General Terms and Conditions, which are a part of our Agreement with you.

If you agree with this Agreement and wish to retain us to provide the proposed services, please sign and return one copy of this Agreement to us as authorization to proceed with performance of the services, and please initial and date the enclosed Terms and Conditions.

We are pleased to submit this Agreement and look forward to working with you and your staff. If you have any questions, please contact me at (978) 532-1900, ext. 2440, or e-mail me at [richards@wseinc.com](mailto:richards@wseinc.com).

Sincerely,

**Weston & Sampson CMR, Inc.**



Stephen J. Richard, P.E., C.P.O.  
Vice President

**FISCAL YEAR 16 SUMMARY**  
**TOWNSEND WATER DEPARTMENT - ACCOUNTS RECEIVABLE**  
 August 31, 2015

UNCOLLECTED FROM JUNE 30, 2015

75,812.05

**CHARGED 07/01/14- 08/31/15**

	7/31/2015	Previous Balance	Total
USER CHARGES	574.00	270,206.00	270,780.00
SERVICE CHARGES	3,309.84	4,742.25	8,052.09
CONNECTION CHARGES	6,000.00	2,000.00	8,000.00
LATE CHARGES	2,668.89	997.33	3,666.22
BACKFLOW	0.00	2,275.00	2,275.00
SUBTOTAL	<b>12,552.73</b>		
TOTAL CHARGES			<b>292,773.31</b>
			<b>368,585.36</b>

**RECEIVED 07/01/14- 08/31/15**

	7/31/2015		
USER CHARGES	61,128.53	170,143.97	231,272.50
SERVICE CHARGES	4,250.25	4,441.55	8,691.80
CONNECTION CHARGES	6,000.00	2,000.00	8,000.00
LATE CHARGES	1,677.43	701.59	2,379.02
BACKFLOW	165.16	1,960.00	2,125.16
SUBTOTAL	<b>73,221.37</b>		
TOTAL RECEIPTS			<b>252,468.48</b>

SENT TO LIEN  
 LIENS COLLECTED  
 ABATEMENTS  
 ADJUSTMENTS  
 UNCOLLECTED

0.00  
 0.00  
 35.00  
 45.50  
**116,036.38**

**368,585.36**

**OUTSTANDING:**

USER CHARGES                   \$   **108,015.07**

SERVICE CHARGES               1,480.80

CONNECTION CHARGES           0.00

LATE CHARGES                   6,290.67

BACKFLOW                       249.84

TOTAL OUTSTANDING       \$   **116,036.38**